

CLAIMS

1. A process for producing a protein-polymer complex, comprising a step of reacting a protein conjugated with a polymer thereto with a compound having a mercapto group to eliminate a polymer which is ester-bound to a mercapto group of a cysteine residue of the protein.
2. The process according to claim 1, wherein the protein conjugated with a polymer thereto is obtained by reacting a protein having a cysteine residue with an activated polymer.
3. The process according to claim 1, wherein the polymer is polyalkylene oxide.
4. The process according to claim 3, wherein the polymer is polyethylene glycol.
5. The process according to claim 1, wherein the compound having a mercapto group is any of dithiothreitol, dithioerythritol, 2-mercaptoethanol, reduced glutathione and N-acetyl-L-cysteine.
6. The process according to claim 1, wherein the compound having a mercapto group is dithiothreitol or 2-mercaptoethanol.
7. The process according to claim 1, wherein the protein is an enzyme.
8. The process according to claim 7, wherein the enzyme contains a cysteine residue in an active center.
9. The process according to claim 8, wherein the enzyme is methioninase, papain or transglutaminase.
10. The process according to claim 1, wherein average 0.7 to 1.3 molecules of a polymer are eliminated per 1 subunit of a protein.
11. A protein-polymer complex obtained by a process as defined in any one of claims 1 to 10.
12. The process according to claim 1, wherein the protein-polymer complex is a methioninase-polyethylene glycol complex, papain-polyethylene glycol complex or transglutaminase-polyethylene glycol complex.
13. A methioninase-polyethylene glycol complex, papain-

polyethylene glycol complex or transglutaminase-polyethylene glycol complex obtained by a process as defined in claim 12.

14. A methioninase-polymer complex, which has average 3.1 or more of free mercapto groups per 1 subunit.

15. An anti-tumor agent, containing a methioninase-polymer complex as defined in claim 13 or 14.

16. A method for eliminating a polymer which has ester-bound to a mercapto group of a cysteine residue of the protein, comprising reacting a protein conjugated with a polymer thereto with a compound having a mercapto group.